

ABSTRACT OF THE DISCLOSURE

A visible and infrared light powered retinal implant is disclosed that is implanted into the subretinal space for electrically inducing formed vision in the eye. The retinal implant includes a stacked microphotodetector arrangement having an image sensing pixel layer and a voltage and current gain adjustment layer for providing variable voltage and current gain to the implant so as to obtain better low light implant performance than the prior art, and to compensate for high retinal stimulation thresholds present in some retinal diseases. A first light filter is positioned on one of the microphotodetectors in each of the image sensing pixels of the implant, and a second light filter is positioned on the other of the microphotodetectors in the image sensing pixel of the implant, each of the microphotodetectors of the pixel to respond to a different wavelength of light to produce a sensation of darkness utilizing the first wavelength, and a sensation of light using the second wavelength, and a third light filter is positioned on a portion of the voltage and current gain adjustment layer that is exposed to light, to allow adjustment of the implant voltage and current gain of the device by use of a third wavelength of light.